

Grade 3:

Math instruction in grade 3 focuses on understanding multiplication and division by working with equal groups, arrays and area models. Students are expected to use strategies to learn basic multiplication facts for all 1-digit numbers. Understanding place value and properties related to addition, subtraction, multiplication and division, are used to perform multi-digit arithmetic, solve 2-step word problems and identify arithmetic patterns. Multi-digit arithmetic includes rounding numbers to the nearest 10 or 100, multiplying 1-digit numbers by multiples of 10, and adding and subtracting numbers to 1000 using place value strategies as well as traditional methods. Third graders also develop understanding of fractions as numbers and are able to compare fractions by reasoning about their size or placement on a number line.

Fall:

- Add and subtract within 1,000
- Round numbers to the nearest 10 or 100 to estimate addition and subtraction problems. In the example below, students can use place value to reason that the answer is about (or a little less than) 770.

Example 1: $427 + 339 = ?$

$$430 + 340 = 770$$

- Use multiple strategies to solve addition and subtraction problems.
- Commutative (Order) Property of Addition - numbers can be added in any order.

$$\text{Ex. } 9 + 4 = 4 + 9$$

- Associative (Grouping) Property of Addition - you can group addends in any way and the sum will be the same.

$$\text{Ex. } (4 + 9) + 2 = 4 + (9 + 2)$$

- Identity Property of Addition - the sum of zero and any number is that same number.

$$\text{Ex. } 4 + 0 = 4$$

- Solve addition and subtraction problems using mental math. They can round or use compatible numbers:

Example 2: $372 - 14 = ?$

$$372 + 6 \rightarrow 378$$

$$14 + 6 \rightarrow 20$$

$$378 - 20 = 358$$

(In this example, students learn that adding the same amount to each number does not change the difference. This strategy allows students to work with easier or “friendly” numbers. e.g., 20 is easier than 14)

- Use the **partial sums** strategy, based on place value, to add or subtract.

Ex. $362 + 271 = ?$

The hundreds are added together

$$300 + 200 = 500$$

The tens are added together

$$60 + 70 = 130$$

The ones are added together

$$2 + 1 = 3$$

$$\text{Therefore, } 500 + 130 + 3 = 633$$

- Use **partial differences** strategy to subtract like parts:

$$\text{Ex. } 472 - 361 = ?$$

The hundreds are subtracted

$$400 - 300 = 100$$

The tens are subtracted

$$70 - 60 = 10$$

The ones are subtracted

$$2 - 1 = 1$$

$$\text{Therefore, } 472 - 361 = 111$$

- Use the standard addition and subtraction **algorithm**

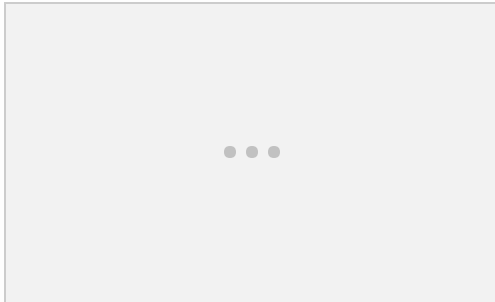
Ex. 23	57
$\begin{array}{r} + 34 \\ \hline \end{array}$	$\begin{array}{r} - 34 \\ \hline \end{array}$

- Use **bar diagrams** for part-part-whole problem solving.

Ex. Jaden had 17 baseball cards.

He received 14 more baseball cards for his birthday.

How many baseball cards does he have altogether?



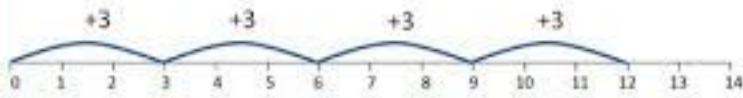
- Understand multiplication and division as the relationship of equal groups to a whole.
- Multiplication as **repeated addition**.

Ex. $3 + 3 + 3 + 3 = 12$

$$4 \times 3 = 12$$

3×4 is the same as $3 + 3 + 3 + 3$

or



or



		Multiplication Fact 2×7
		Repeated Addition $7 + 7$
		Multiplication Fact 3×3
		Repeated Addition $3 + 3 + 3$
		Multiplication Fact 3×7
		Repeated Addition $7 + 7 + 7$
Product 14	Product 9	Product 21

bar diagram



$$5 \times 4$$

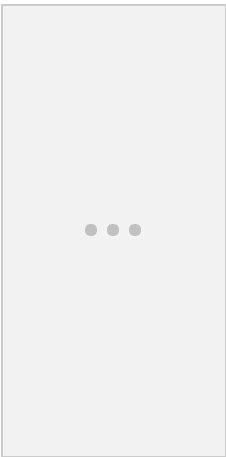
- Division as **repeated subtraction**:

$$12 \div 3 = 4$$

$$\text{Ex. } 12 - 3 - 3 - 3 - 3 = 0$$

- Use **arrays** as one way to think about and understand multiplication and division.

○  $2 \times 4 = 8$ and $8 \div 2 = 4$

○  $4 \times 2 = 8$ and $8 \div 4 = 2$

How-to videos:

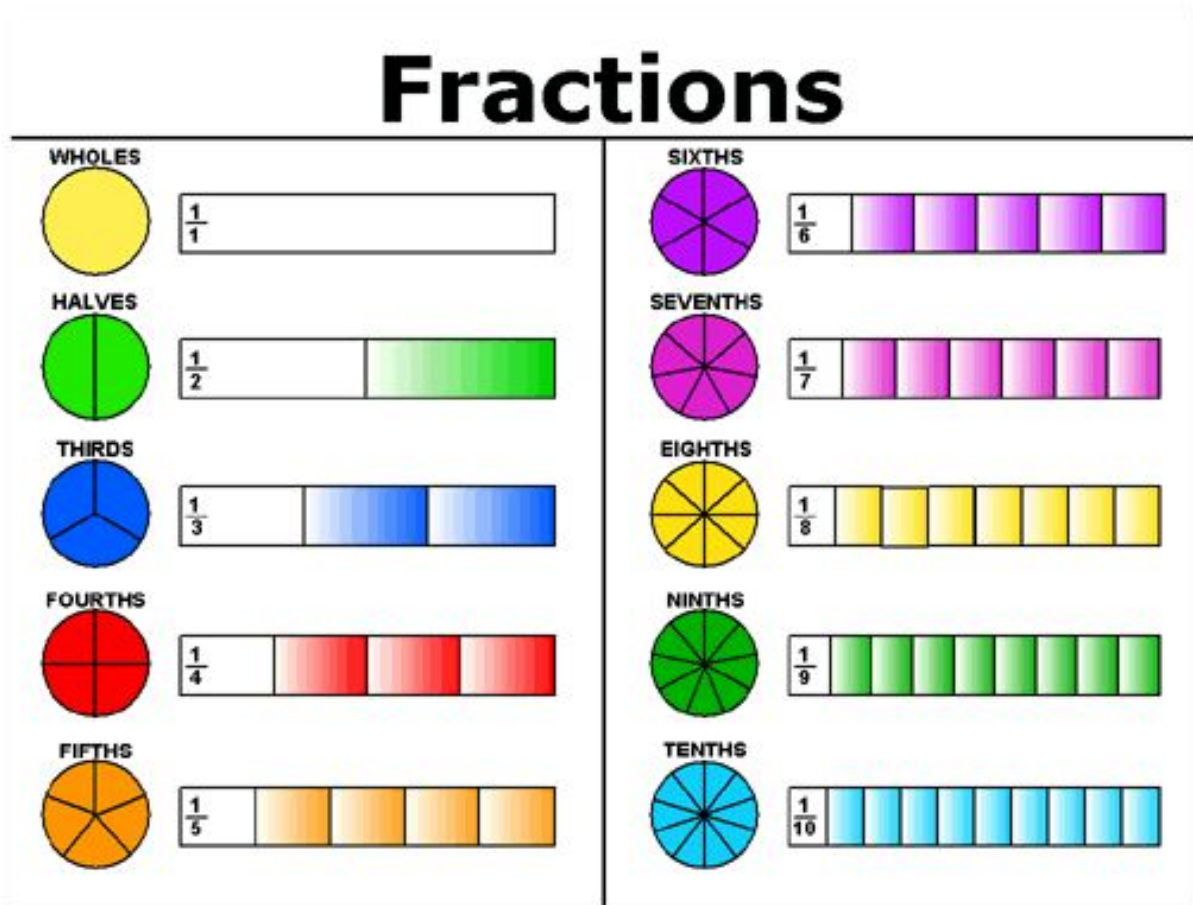
[Using a Bar Model to add and subtract](#)

[Adding 3-digit Numbers](#)

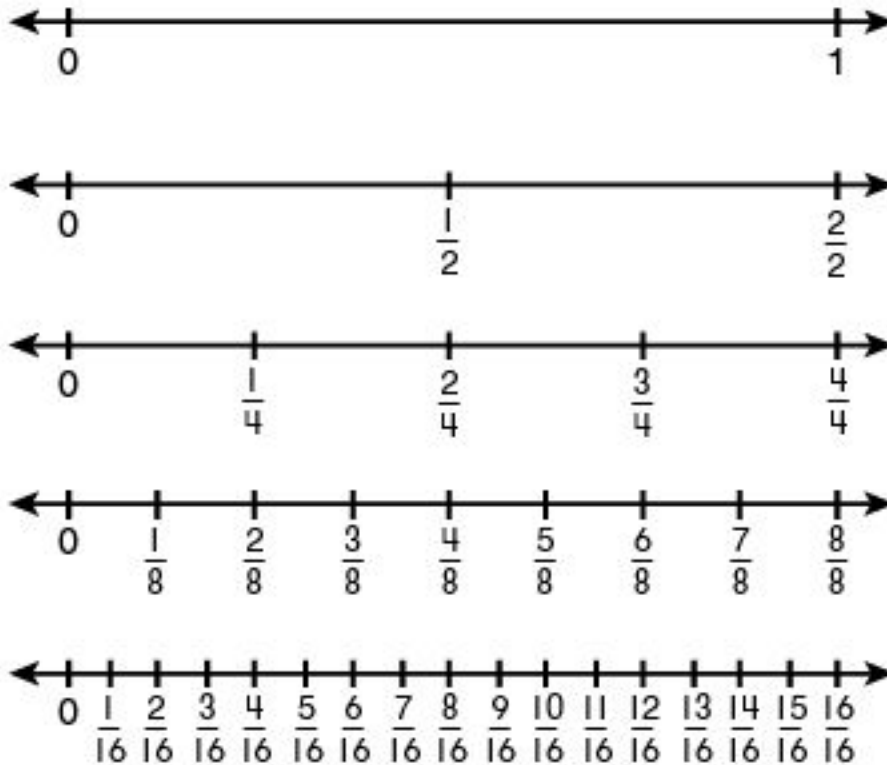
[Subtracting 3-digit Numbers with Regrouping](#)

Winter:

- Build an understanding of fractions as numbers that represent an amount made up of equal parts of a whole



- Understand and represent a fraction as a number on the number line



- Understand and be able to show equivalent fractions
- Use reasoning to compare fractions with the same numerator or denominator using: $>$, $<$, $=$
- Tell and write time to the nearest minute and solve word problems involving addition and subtraction of time in minutes.
- Add, subtract, multiply or divide to solve one-step word problems involving standard units of weight or liquid measure

How-to videos:

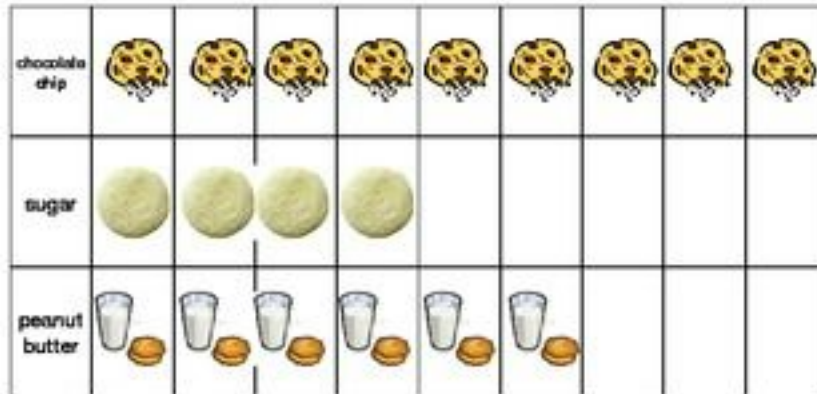
[How to show a fraction on a number line](#)

[Using models to show equivalent fractions](#)

[Comparing fractions with like numerators and denominators](#)

Spring:

- Represent and interpret data by drawing a scaled picture graph or bar graph and comparing relationships between the category sets



What flavor did the students like most?

How many people like sugar cookies or peanut butter cookies? (think about addition)

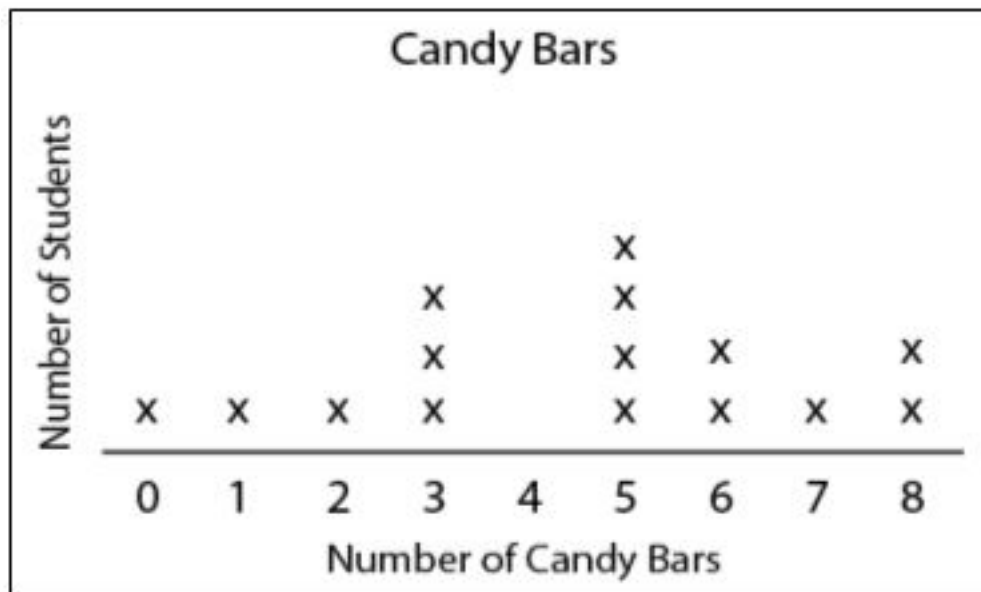
How many more people voted for chocolate chip than peanut butter? (think comparing, or subtraction)

How many people like sugar or peanut butter cookies?

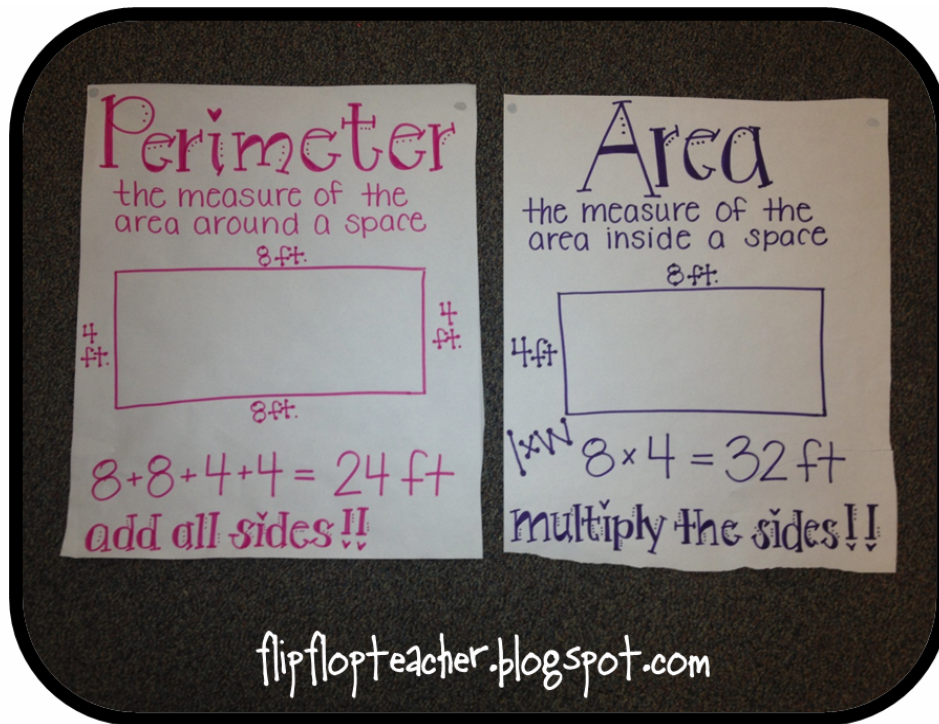
How many less people voted for sugar than peanut butter? (think comparing or subtraction)

If 3 more people voted for peanut butter, how many votes would it have? (think addition)

- Use a line plot to show measurement data



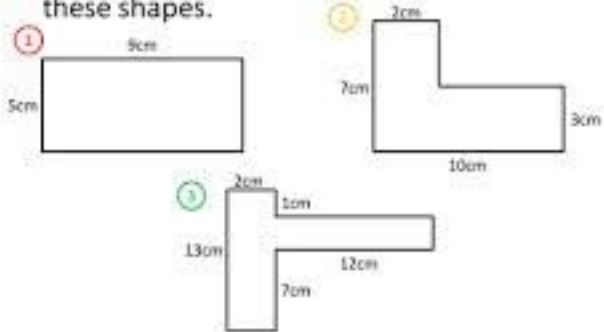
- Develop an understanding of area and perimeter



- Find the area of a square or rectangle as it relates to tiling, repeated addition and multiplication
- Find the area of regular and irregular polygons by composing and decomposing squares and rectangles within the shape

Starter

Calculate the area and perimeter of each of these shapes.



How-to videos: